











Date: Monday, 16/03/2009 9:14:07 AM  
User: Julie Dawson

# Process Sheet

<b>Customer</b> : CU-DAR001 Dart Helicopters Services	<b>Drawing Name</b> : BK117 SKIDTUBE ASSEMBLY
<b>Job Number</b> : 46494A	
<b>Estimate Number</b> : 12898	
<b>P.O. Number</b> :	<b>Part Number</b> : D117762041
<b>This Issue</b> : 16/03/2009 <b>S.O. No.</b> :	<b>Drawing Number</b> : D3582 REVA
<b>Prsht Rev.</b> : NC	<b>Project Number</b> : N/A
<b>First Issue</b> : / / <b>Type</b> : SKIDTUBES	<b>Drawing Revision</b> : A
<b>Previous Run</b> : 44390A	<b>Material</b> :
<b>Written By</b> :	<b>Due Date</b> : 31/03/2009 <b>Qty:</b> 1 <b>Um:</b> Each
<b>Checked &amp; Approved By</b> : <u>Julie Dawson</u>	
<b>Comment</b> : Est Rev:A 07.06.11 New Issue EC Est Rev:B 08-02-22 change to revA as per dwg DD verified by:EC	
<b>Additional Product</b>	
Job Number: 	
<b>Seq. #:</b>	<b>Machine Or Operation:</b> <b>Description :</b>
1.0	DC DOCUMENT CONTROL
 	
<b>Comment:</b> DOCUMENT CONTROL Photocopy bluefile & type labels per PPP D117-762-041 CHG001 N/A <i>ky</i>	
2.0	D2962150 3.540 Outer Tube, Extrud
 	
<b>Comment:</b> Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s) Pick: Qty Part Number Description Batch  Extrusion <i>B28672</i> <i>DP</i> <i>9-3-16</i> <i>(1)</i>	
3.0	SKIDTUBES 1 SKIDTUBESS RESOURCE 1
 	
<b>Comment:</b> LANDING GEAR RESOURCE 1  1-Determine square end of tube and deburr  2-Drill #30 pilot holes using DT8678.  3- open holes to 5/16" <i>DP</i> <i>9-3-16</i>	
4.0	BENDING BENDING MACHINE - SKIDTUBES
 	
<b>Comment:</b> BENDING MACHINE <i>MB</i> <i>09-03-16</i> <i>(1)</i> Bend tube as per program D3582 on CNC Bender and Dwg D3582. Use 5/16" locator pin on buggy "A".	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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Job Number:



Seq. #:

Machine Or Operation:

Description :

5.0

SKIDTUBES 1

SKIDTUBESS RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Cut Fwd end of the tube using DT8185

2-Cut Aft end using DT8185

3-Deburr ends

4-Drill Aft Cap holes using DT8678 \*\*\*DO NOT OPEN AFT CAP HOLE\*\*\*

5-Locate DT 8973 & Drill Ground wire hole on top of Tube.

6-Install 3/16 cleco in Ground wire hole ,then drill all X-Bolt holes using 3/16" drill.

7-Drill pilot holes for wearplates using DT8974

8-Open wearplate holes to Ø19/64" (0.297") as per Dwg D3582.

9- open ground wear holes to 0.391" as per section B-B

10-Open Aft Cap holes using .209" drill.

11-Deburr holes.

DP 9-3-16

PM 09-03-16

6.0

D2964

Cap



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Cap

Batch:

314101

BC

09/04/07

7.0

SKIDTUBES 1

SKIDTUBESS RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Weld fwd cap D2964 per dwg D3582 and QSI 004

A/R AL ROD

Batch:

M110676

BC 09/04/07

2-Grind flush

M 9-4-7

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Job Number:



Seq. #:

Machine Or Operation:

Description :

8.0

QC10

VISUAL INSPECTION OF GROUND WELDS



Comment: VISUAL INSPECTION OF GROUND WELDS

9-4-08 ①

9.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

9-4-08 ①

10.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1

① M 9-4-18

11.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

② 9-4-8

12.0

D2971

Cross Bolt Spacer



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Cross Bolt Spacer

batch: ③ 44445 ① M 9-4-9

13.0

D2973

Cross Bolt Spacer



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Cross Bolt Spacer

Batch: ③ 14636 ② M 9-4-9

14.0

D36621

Crossbolt Spacer



Comment: Qty.: 3.0000 Each(s)/Unit Total : 3.0000 Each(s)

SPACER

batch: ③ 39585 ③ 9-4-9 M

15.0

D36623

Crossbolt Spacer



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

SPACER

batch: ③ 44456 ① 9-4-9 M

W/O:		WORK ORDER CHANGES					
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Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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Part Number: D117762041

Job Number:



Seq. #:

Machine Or Operation:

Description :

16.0

D35841

Web



Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s)

WEB

B 46540 D H 9-4-8

17.0

SKIDTUBES 1

SKIDTUBESS RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Open X-Bolt holes to .750"(4Places) as per Dwg D3582, section B-B

2-Counter Sink X-BOLT holes as per Dwg D3582

3-Deburr and blow out chips from inside of tube.

4-Bond web as per Dwg D3582 & QSI 015

A/R 241 Sike Flex

Batch: 111031

Exp Date: 10-1-7

5-Weld x-bolt spacers(D2973) as per Dwg D3582 section B-B.

A/R AL ROD

Batch: M110676 BE 7-4-9

6-Grind welds flush

Pm 09-04-13(1)

H 9-4-8

Tools: E

18.0

QC10

VISUAL INSPECTION OF GROUND WELDS



Comment: VISUAL INSPECTION OF GROUND WELDS

S 09/04/13 (40)

19.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

S 09/04/13 (40)

20.0

POWDER COATING

POWDER COATING



Comment: POWDER COATING

Powder Coat White Gloss (Ref: 4.3.5.1) as per QSI 005 4.3

Pressure wash und/BK 09/04/23  
M110939

START TIME:

7:20

OVEN TEMPERATURE:

320°

FINISH TIME:

7:50

BK 09-04-24

**Dart Aerospace Ltd**

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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Job Number: 46494A

Part Number: D117762041

Job Number:



Seq. #:

Machine Or Operation:

Description :

21.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

FL 09/04/27 (1)

22.0

ALS41032130

Insert



Comment: Qty.: 36.0000 Each(s)/Unit Total : 36.0000 Each(s)

Insert

Batch: m108606

FL

23.0

ALS4428165

Inserts



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Inserts

batch m 6989

\*\*\*same as ALS7-428-165 QSI 0017 \*\*\*

FL

24.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Install Wearplate & Ground Wire inserts as per Dwg D3582.

FL 09/04/27 (1)

25.0

D2965

Cap, 105 Skidtube



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Cap

Batch: D47235

FL

26.0

D35083

Wearplate



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

WEARPLATE

Batch: D42250

FL

27.0

D35089

Wearplate



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

WEARPLATE

Batch: D36417

FL 09/04/27 (1)

W/O:		WORK ORDER CHANGES					
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Job Number: 46494A

Part Number: D117762041

Job Number:



Seq. #:

Machine Or Operation:

Description :

28.0

D350811

Wearplate



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Batch: B40398

WEARPLATE

FL

29.0

D350813

Wearplate



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

WEARPLATE

Batch: B42252

FL

30.0

D35583

Gasket



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

GASKET

Batch: B45661

FL

31.0

D35589

Gasket



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

GASKET

Batch: B40361

FL

32.0

D355811

Gasket



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

GASKET

Batch: B40399

FL

33.0

D355813

Gasket



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

GASKET

Batch: B42255

FL

34.0

AN3C4A

BOLT



Comment: Qty.: 28.0000 Each(s)/Unit Total : 28.0000 Each(s)

BOLT

Batch: M111424

FL 09/04/27

①

**Dart Aerospace Ltd**

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Job Number: 46494A

Part Number: D117762041

Job Number:



Seq. #:

Machine Or Operation:

Description :

35.0

AN3C5A

Bolt



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Bolt

Batch: m 111424

FL

36.0

AN44A

Bolt



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Bolt

batch m 108138

FL

37.0

AN960C10L

washer



Comment: Qty.: 28.0000 Each(s)/Unit Total : 28.0000 Each(s)

washer

Batch: m 111424

FL

38.0

AN960JD10L

Washer



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Washer

batch m 109632

FL

39.0

AN960JD416L

Washer



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Washer

batch m 108583

FL

40.0

NAS1611012

O-RING



Comment: Qty.: 6.0000 Each(s)/Unit Total : 6.0000 Each(s)

O-RING

batch: m 108673

FL

41.0

NAS1611015

O-RING



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

O-RING

batch: m 107178

FL 08/04/27 ①

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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Job Number: 46494A

Part Number: D117762041

Job Number:



Seq. #:

Machine Or Operation:

Description :

42.0

NAS1611016

O-RING



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

O-RING

batch: m107178

FL

43.0

D3492049

Plug Assembly



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

PLUG ASSEMBLY

batch: 040356 1540632

FL

44.0

D3492051

Plug Assembly



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

PLUG ASSEMBLY

batch: 039723

FL

45.0

D3492053

Plug Assembly



Comment: Qty.: 6.0000 Each(s)/Unit Total : 6.0000 Each(s)

PLUG ASSEMBLY

batch: 1544063

FL

46.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

1-Inspect for Foreign objects

2-Install Aft cap as per Dwg D3582, Detail "C"

A/R 241 Sika Flex Batch: m11087

Exp Date: 10/20

3-Install Wearplates as per Dwg D3582 ,

Note: Install Bolt and washer on Ground Wire inserts on top of tube see section D-D of dwg D3582

\*\*\*\*\*Do not install bolts where indicated on Dwg(Note #6)\*\*\*\*\*

A/R 241 Sika Flex Batch: m11087

Exp Date: 10/20

4-assemble o'ring as per dwg D3492 and apply o'ring lube

A/R 55-o'ring lube batch: m101223

FL 09/04/27 (1)

W/O:		WORK ORDER CHANGES					
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5- Wing Walk as per Dwg D3043 and QSI 005 4.4 M111013 - F2 09/04/27 (1)

47.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

09/04/28 (1)

48.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and pack for shipping as per PPP D117-762-041

Location:

PPP Rev:

PPP

46 994

09/04/28 (1)

49.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

09/04/28 (1)

Job Completion



MF  
09-04-28

W/O:		WORK ORDER CHANGES					
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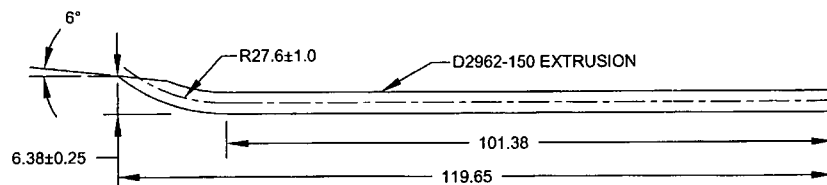
# PARTS LIST FOR D3582-041 SKIDTUBE ASSEMBLY

Qty	Part Number	Description
X	D3582-041	SKIDTUBE ASSEMBLY
1	D2962-150	EXTRUSION
1	D2964	CAP
1	D2965	CAP
1	D2971	CROSS BOLT SPACER
2	D2973	CROSS BOLT SPACER
2	D3492-049	PLUG ASSEMBLY
2	D3492-051	PLUG ASSEMBLY
6	D3492-053	PLUG ASSEMBLY
1	D3508-3	WEARPLATE
1	D3508-9	WEARPLATE
1	D3508-11	WEARPLATE
1	D3508-13	WEARPLATE
1	D3558-3	GASKET
1	D3558-9	GASKET
1	D3558-11	GASKET
1	D3558-13	GASKET
1	D3584-1	WEB
3	D3662-1	CROSS BOLT SPACER
1	D3662-3	CROSS BOLT SPACER
36	AELS-1032-130	INSERT
2	ALS7-428-165	INSERT
28	AN3C4A	BOLT
2	AN3-5A	BOLT
2	AN4-4A	BOLT
28	AN960C10L	WASHER
2	AN960JD10L	WASHER
2	AN960JD416L	WASHER

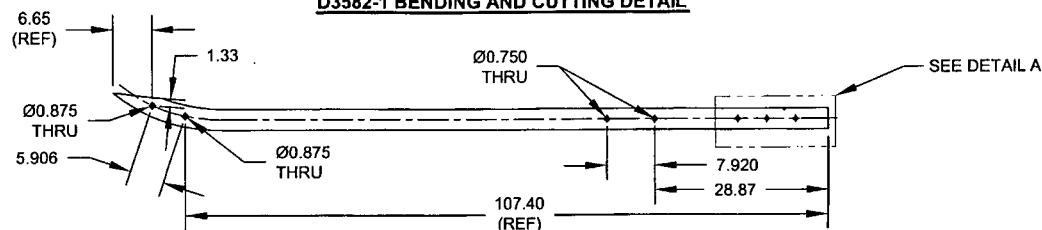
## GENERAL NOTES:

- ALL DIMENSIONS ARE IN INCHES
- TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- WELDING TO BE DONE PER DART QSI 004
- INSERT D3584-1 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241/291 ADHESIVE PER DART QSI 015 AFTER BENDING.
- USE DART DRILL TEMPLATE DT8900 TO LOCATE AND DRILL Ø0.297 HOLES (36 PLACES) FOR WEARSHOE INSERTS. INSTALL AELS-1032-130 PER SECTION G-G (36 PLACES) AFTER FINISH. SEAL WEARPLATE BOLTS WITH SIKAFLEX-241/291.
- DO NOT INSTALL AN3C4A BOLTS AND AN960C10L WASHERS IN INDICATED LOCATIONS.
- FINISH:
  - CHEMICAL CONVERSION COAT PER DART QSI 005 4.1 PRIOR TO INSERTING D3584-1 WEB.
  - POWDER COAT ASSEMBLY GLOSS WHITE (REF 4.3.5.1) PER DART QSI 005 4.3.
  - ANTI-SELD PAINT AS INDICATED TO 1.00 ABOVE CENTER LINE PER DART QSI 005 4.4.

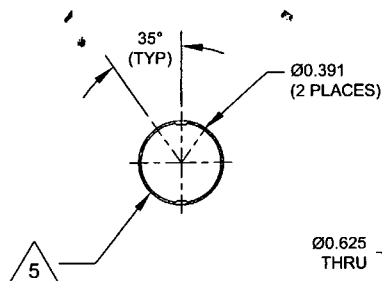
NO WORK ORDER  
RETURN TO  
ENGINEERING  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE



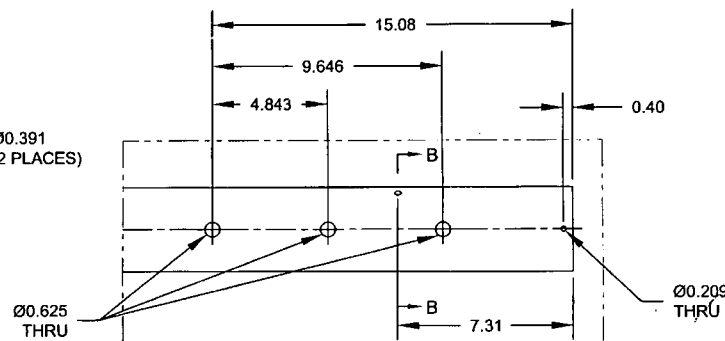
D3582-1 BENDING AND CUTTING DETAIL



D3582-1 DRILLING DETAIL



SECTION B-B  
SCALE 1:5



DETAIL A  
SCALE 1:5

RELEASED  
67-11-22

A	NEW ISSUE	PH	07.06.08
REV.	DESCRIPTION	BY	DATE
DESIGN			
DRAWN			
CHECKED			
MFG. APPR.			
APPROVED			
DE APPR.			
DATE	07.06.08		

DART AEROSPACE USA, INC  
PORT HADLOCK, WA  
DRAWING NO. D3582  
REV. A  
SHEET 1 OF 2  
TITLE BK 117 SKIDTUBE ASSEMBLY  
SCALE 1:20

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

NO. 169

AWS D17.1.2001  
QUALIFICATION TEST RECORD

Name: Barclay Elliot  
Job number: 40335A  
Part number: D117 762 041  
Description: Bk 117 skid  
Welding Process: Tig~~[ ]~~ Mig~~[ ]~~  
Base material: Aluminium  
Current: AC~~[ ]~~ DC~~[ ]~~

TEST REQUIREMENTS AND RESULTS

Visual: pass~~[ ]~~ fail~~[ ]~~  
Penetration: pass~~[ ]~~ fail~~[ ]~~

UNACCEPTABLE

Cracks: pass~~[ ]~~ fail~~[ ]~~  
Undercut: pass~~[ ]~~ fail~~[ ]~~  
Pin holes: pass~~[ ]~~ fail~~[ ]~~  
Overlap (cold lap): pass~~[ ]~~ fail~~[ ]~~  
Porosity (surface): pass~~[ ]~~ fail~~[ ]~~  
Coloration: pass~~[ ]~~ fail~~[ ]~~

Qualifier [Signature] Date of Test Coupon 08-08-21

Welder [Signature] Date of Test Coupon 08-08-21

The above named individual is qualified in accordance with AWS D17.1.2001 to weld